March 1970 35/8

Wildlife conservation
and the human environment

Soil Conservation Service
U.S. Department of Agriculture

Soil Conservation

Devoted to the wise use of land and water resources

Values . . .

Conservation district cooperators in many places are taking positive action to provide sanctuaries and create new or improved habitats for wildlife—often at considerable expense with no promise of financial return.

It's convincing proof that intangible values often outweigh the economic with people who make the decisions that count.

Sanctuary

Note, for example, the voluntary dedication of a part of the Camp Ranch in Texas to preserving the unique nesting habitat of the rare golden-cheeked warbler (p. 171).

In a different setting but with similar motives, a Kentucky landowner established a private wildlife sanctuary and nature education center (p. 173).

Something added

The sensitive account by a district cooperator (p. 179) of how she and her family watched the growth of a new wildlife community around their farm pond relegates economic gain to a low position on their scale of values.

In each of these examples, chosen from the many reported, SCS biologists and conservationists helped with planning as a service to the conservation district.

Recon

"Reconnaissance: An exploratory inspection."—Webster's 3d ed.

Alert technical specialists and conservationists with pertinent intelligence to contribute to our new department (p. 190) should send it to the editor.

COVER: Whitetailed deer in a Michigan forest. Many conservation district cooperators make positive improvements in wildlife habitat, in addition to normal soil and water conservation practices.

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Soil Conservation

Devoted to the wise use of land and water resources

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A private sanctuary for a rare warbler

By Lynn J. Post and Vernon M. Hicks
Biologists, SCS, Bandera and Temple, Tex.

Concern for a rare bird smaller than a sparrow turned the bulldozers aside in brush-clearing operations for range improvement on the 8,000-acre Camp Ranch in Texas.

The Camp brothers—John, Jr., Rodney, and Bill—knew that the dense oak-juniper woodland on their ranch was some of the little remaining nesting habitat of the golden-cheeked warbler. When they made a conservation plan as cooperators with the Bandera Soil and Water Conservation District in 1962, they worked out a clearing pattern that would preserve critical areas of mature juniper (cedar) for the birds while making room for grass on the more productive soils.

The golden-cheeked warbler is a bird of very local occurrence, nesting only in the "Hill Country" (Edwards Plateau area) of Texas and wintering in Mexico and Central America. It requires a specific type of habitat for nesting—oak-juniper woodland where mature or virgin juniper is dominant.

The mature juniper stands are becoming scarce as landowners seek out the last of them as a source of top-quality posts, and ranchers clear the land to improve the range. Second growth juniper is plentiful in the Hill Country and the plant has invaded much formerly open grass-

A Texas ranch cooperating with a conservation district is preserving areas of virgin juniper (above) required as nesting habitat by the rare golden-cheeked warbler. Strips and patches of brush remain after clearing for range improvement.

land, but the golden-cheeked warbler does not use these young stands as nesting sites.

The Camp Ranch is a working ranch that raises livestock and wildlife. When the conservation plan was developed, the entire ranch was covered with dense brush, which severely limited forage production. As a result, little profit could be realized from either livestock or wildlife, and it was difficult to observe and enjoy deer and other wildlife. Following a well thought-out brush control program and sound grazing management, the owners have made improvements in both livestock production and wildlife abundance.

All brush control has been done with definite consideration for wildlife. Since deer use the steeper slopes for food and rest areas, the rule has been to leave the rocky and steep areas in brush and clear the more productive sites. Selected areas of the mature juniper and oak were retained for the golden-cheeked warbler.

Many choice wildlife foods now grow in areas that had been choked out by the brush. As a result, the ranch now produces more livestock forage, supports a large healthy deer and turkey population, and the rare golden-cheeked warbler has prime nesting cover available. ◆

At right, SCS District Conservationist Frank Sprague and Rancher John Camp, Jr., check the conservation plan map showing the area of prime nesting habitat in front of them to be preserved. Below, an aerial view of the Camp Ranch shows the pattern of brush clearing leaving a large area of mature oak-juniper woodland in the bend of the Medina River for the golden-cheeked warbler.

A place to learn the value of wildlife

The Clyde E. Buckley Wildlife Sanctuary

By William H. Casey and Stewart M. Calvert

Biologist and district conservationist, SCS, Lexington and Versailles, Ky.

That wildlife in the human environment is a necessity rather than a luxury is one of the ideas a person takes away from a visit to the Clyde E. Buckley Wildlife Sanctuary near Versailles, Ky. Overlooking the valley of the Kentucky River, this 285-acre conservation education and nature study center is readily accessible to more than a quarter of a million people.

Operated by the Buckley Hills Audubon Society in cooperation with the National Audubon Society, the sanctuary was developed in cooperation with the Woodford County Soil and Water Conservation District with technical assistance from the Soil Conservation Service and other agencies and individuals.

The sanctuary offers both the scientific community and the general public an opportunity to learn about the interrelationships of living things, including man himself, and about how dependent man is upon other forms of life for his own well-being.

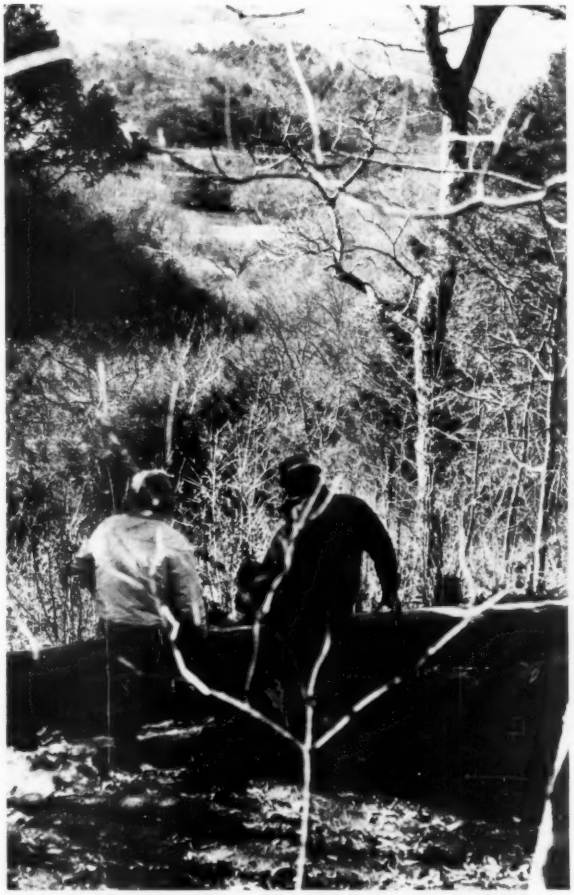
The ecological cycle

Here people can study, or have interpreted for them, the organization of life in ponds and streams; the natural history of birds, mammals, insects, reptiles, fishes, and many other forms of animal life; the soil-plant-animal-man relationship; and the processes of decay, by which tiny animals, such as arthropods and annelids, break down organic matter so bacteria can further reduce it to the molecules that again become the building blocks of the food man eats, the water he drinks, and the air he breathes. Here people come to realize, sometimes for the first time, how vital it is to human life that this recycling of matter be carried on without interruption.

The sanctuary was created by the beneficence of Mrs. Clyde E. Buckley, widow of a prominent Lexington businessman. Mr. Buckley acquired the original tract in 1954 as a general farm of a type then common to Woodford County. The principal crops were tobacco and hay, and a considerable acreage was used for pasture. The steeper portions supported stands of oak-hickory woodland.

Beginning of a sanctuary

After 1954, however, farming was not practiced as intensively as before, and many of the fields grew up in brush and trees. By the time Mr. Buckley died, in 1966, there existed an intermixture of various



kinds of vegetation, a condition that normally attracts and holds a great variety and abundance of wildlife.

After her husband's death, Mrs. Buckley decided to explore the possibility of making the area a wildlife sanctuary. She solicited the advice of Ray Harm, Kentucky's noted wildlife artist, who visited the area and encouraged her to make it a sanctuary.

He suggested that the interest of the National Audubon Society be investigated, and he himself was instrumental in getting that organization to assume direction of the development of the area until a local affiliate could be formed. Thus the Clyde E. Buckley Wildlife Sanctuary was born.

As director-naturalist to supervise the use of the area and to carry out development and management measures, Mrs. Buckley secured the services of Ellwood J. Carr, a one-time California farmer and more recently a naturalist with the Kentucky Department of Parks at Pine Mountain State Park.

Needed: inventory and plan

Carr frankly admits that when he assumed his duties as director he hardly knew which of the many tasks before him he ought to undertake first. What he needed most, he saw, was an inventory of the sanctuary's physical resources and an orderly plan for their development and use.

Recalling that while farming in California he had obtained technical assistance in developing a conservation plan from the Sacramento County Soil and Water Conservation District, he decided to ask for similar assistance from the local Woodford County Soil and Water Conservation District.

Subsequently, with the assistance of the Soil Conservation Service biologist, a conservation plan was developed for the sanctuary as a cooperator with the district. The plan provides for the establishment of a conservation-cropping system for the 15 acres of land that is to remain in cultivation, the construction of a 1-acre wildlife pond and the renovation of a smaller one, preservation of an old field habitat by periodic strip-mowing, the construction of nature interpretation trails, and the establishment of plant succession study plots.

By the fall of 1969, the new wildlife pond was completed, the smaller pond enlarged, 30 acres of old field habitat mowed, 6 miles of nature trails built, and 2 acres of plant succession plots established. The conservation-cropping system will be installed in the spring of 1970.

In addition to helping with the plan, the district has provided information on the design of parking lots and observation platforms, and on the selection of shrubs and trees that are both suitable for landscaping and attractive to birds. Director Carr was also given advice on such diverse subjects as how to clean animal skeletons with dermestid beetles, how to census the bird population of the area, how to estimate the amount of grain a seed-eating bird of a given size will eat in a day, and how to inventory the sanctuary's vegetation.

Ray Harm House

Much progress has been made in improving the buildings and grounds during the past year. The old farm dwelling, which is now used as an interpretative center, has been renovated inside and out and has been appropriately named "Ray Harm House."

The interior has been redecorated, and display cases containing fossils, animal skulls, and bird nests have been installed. Mounted plants, collected on the area, are displayed on the walls. One room contains, in addition to the other displays, a complete collection of Ray Harm prints. Another room has been converted into a small auditorium where the director-naturalist conducts regularly scheduled interpretive programs. The grounds around it have been landscaped and a number of trees attractive to wildlife have been planted.

Not far from the interpretive center and overlooking the enlarged wildlife pond is a frame bird-watching shelter, given to the sanctuary by Mrs. Marion Lindsay, Mrs. Buckley's sister. Here visitors can watch birds come in to the many

SCS District Conservationist Stewart Calvert (left) and Director-Naturalist Ellwood Carr discuss the successful modification of a livestock pond to make it more attractive to wildlife.

feeders that have been erected, and, if they are very quiet and very lucky, they may see a whitetailed deer come to the pond for water.

Visitors to the sanctuary were comparatively few until October 1968 when the director issued the sanctuary's first newsletter. The number of visitors promptly increased from about 50 a month to about 200 and has increased steadily until in October 1969 it was more than 750.

Variety of users

People come as individuals, in family groups, and as groups. Carr estimates that about half of them are in organized groups, such as garden clubs, the Girl Scouts, and college classes studying botany, ecology, or ornithology. Transylvania University in Lexington and Asbury College in nearby Wilmore, especially, are frequent users of the area.

High school science teachers in summer classes at the University of Kentucky, the University of Louisville, and Asbury College have visited the sanctuary to study nature education as a form of outdoor recreation. Other individuals from as far away as Florida have visited the area to gather ideas and information for use in developing similar areas in their communities.

The future of the Clyde E. Buckley Wildlife Sanctuary appears bright. Mrs. Buckley has added to the original tract until the area is now about 285 acres. Financial support comes from an endowment fund established by Mrs. Buckley, income from the sale of crops grown on the area, and dues collected from members of the Buckley Hills Audubon Society.

Interest in the sanctuary has increased Audubon Society membership in Kentucky from about 250 to more than 4,000 in 2 years.

Plans for further development of the sanctuary call for expanding the interpretive program and improving facilities as time, money, and labor permit. ♦

Nature trails are for everyone

By Robert J. Lemaire
Conservation biologist, SCS, Lincoln, Nebr.

For some people, the out-of-doors is only a place to shoot, catch, collect, or cut down. But for those whose "bag" is not bagging some living thing, nature trails provide an excellent route for relaxation and appreciation.

Good layout and management are key factors in the creation and maintenance of a trail that will please serious students of nature as well as casual observers just out for a stroll. Well-planned trails not only interest those who have studied biology and ecology but also teach something about environment to many who know little about their natural surroundings.

A single-purpose trail might focus a wanderer's attention on geological or botanical sights, marsh life, or animal shelters. In most instances, a multipurpose trail suits more tastes and lends itself to freer interpretation and use. Nature photographers, artists, bird watchers, and other nonconsumptive enjoyers and recorders may respond to the same trail in many different ways.

Choose routes of varying length and content after walking through the proposed trail area and noting natural phenomena to be included in the final scheme. Inventory should be taken every 3 to 4 weeks during the growing season so plants blooming at different times will be labeled properly or accounted for in any handout prepared for visitors.

It is sometimes desirable to transplant interesting species if they grow in the vicinity but are not on routes selected. As for poisonous plants, either remove them or keep and label those that are out of reach so that all may learn to recognize them.

A winding one-way trail affords a sense of seclusion. A loop or figure eight with entrance and exit in about the same location is preferred. Use brightly colored plastic marker flags to indicate paths and points of interest until final labels are made. Plan to call attention to evidence of insect damage, rotten logs, mosses, fungi, and typical wildlife as well as plants and trees.

Experience shows that a comfortable length for a nature trail is about one-half mile or approximately 45 minutes walking time. Visitors may appreciate an occasional marker that tells where to turn at intersections or how far it is to the end. Rest areas with logs, grassy spots, rustic benches, or flat rocks will help forestall fatigue and flagging interest along the way.

Where possible, the trail should lead visitors along rocky ridges and streams and through a variety of habitats, such as woodland, prairie, swamp, and marsh. Selective tree cutting sometimes opens a beautiful vista or overlook that further enriches a trail.

Its surface should be reasonably smooth without being artificial. Sometimes initial mowing is all that is needed. Otherwise, wood chips or sawdust are suitable. Steep slopes should be avoided because they tire visitors and increase erosion and maintenance problems.

In addition to giving the trail itself an appealing name, make sure that examples of conspicuous flora and fauna are clearly marked. Plastic signs and others mounted on weatherproof wood, composition material, or metal should be legible, attractive, and permanent.

Although preference and budget will dictate the labeling scheme, one may put names or numbers on each sign. A descriptive booklet containing further explanation can be keyed to the trail's content. Some trails have been marked in Braille for the benefit of the blind. ♦

For homeless waterfowl...

Blasting potholes in drained wet land restores nesting areas

By Robert W. Franzen
Wildlife biologist, SCS, Auburn, N.Y.

In 1954, highway construction in Cayuga County, N.Y., drained 30 acres of good waterfowl habitat. Milton D. Casey owned a portion of the marsh, once a summer home for mallards. During hunting season, he could bag his limit of ducks in a morning. Today, Casey and the Cayuga County Soil and Water Conservation District have successfully reestablished waterfowl habitat by blasting potholes.

During highway reconstruction, crews lowered the culvert pipe in the new roadbed, causing surface drainage. The ground-water table in this organic muck soil, however, remained near the surface to support aquatic plants, but there was no standing water to attract waterfowl.

For esthetic and sporting reasons, Casey wondered if water could be impounded by an earthen dam to develop part of the area into a waterfowl marsh. The conservation district office in Auburn investigated the site and found that an earth embankment was not feasible because the muck soil was extremely deep, porous, and unstable.

As an alternative to impounding water, potholes were recommended. Casey had read about creating potholes with explosives and decided to try the method. A licensed contractor undertook the blasting job. Dynamite could be used, but ammonium nitrate was cheaper. After preliminary tests on Casey's 5 acres of wet land, he blasted 21 potholes measuring 25 to 30 feet in diameter and 8 feet deep—each was the result of placing three 25-pound ammonium charges 6 to 8 feet apart in a triangular pattern.

The cost of blasting materials averaged $4.50 per pothole. The contractor and his two helpers needed 35 minutes to set and detonate the charges on an average pothole site. The total cost to produce each pothole was approximately $20. By installing four potholes per acre and allowing approximately 100 feet between centers, Casey provided some 2,000 square feet of water surface per acre.

After blasting the potholes, there remained two more items recommended by SCS biologists to be installed. First, an 8- to 10-foot long "loafing log" was anchored into the bank extending toward the center of each pothole. These logs provide good resting sites and places for ducks to defend their territories. They are important areas for courtship, breeding, and brood raising.

A pothole is blasted with 75 pounds of ammonium nitrate-fuel mixture.

No surface water was available to waterfowl before pothole development.

Blasted holes quickly filled with water, creating ponds 25 feet in diameter and about 8 feet deep. A wood duck nesting box and loafing log were then added.

Second, wood duck nesting boxes, installed on nearby posts or trees, compensated for the lack of hollow trees.

Several species of waterfowl food plants became established naturally in the potholes shortly after blasting, so planting was unnecessary. Teal arrived on the potholes shortly afterward, indicating that the artificial marshes should carry increased numbers of wildfowl during the fall and spring migration and next summer's nesting.

Each new pothole is a potential home for a brood of each duck species common to the area. On that basis, we might expect black ducks and mallards to raise 210 ducklings a year on Casey's 21 potholes. Experience indicates, however, that only 15 percent of New York's ponds produce a brood of ducks each year. Even at that rate, Casey's project could produce 30 ducklings a year.

Interest in creating waterfowl habitat by blasting potholes has spread rapidly in the Cayuga and adjacent Oswego County soil and water conservation districts. Pothole blasting is an applicable alternative for waterfowl habitat development on level, high water table soils throughout New York and particularly in the Lake Plains area.♦

Aerial view of Casey's potholes shows approximately 10,000 square feet of open water in 5 acres.

A garden is a whole city park

How big is a garden? To the Alexandria Garden Club its as big as the 94-acre city park in the middle of Alexandria, La.

This park is where the 170-member club put a conservation project to work which helped them win the coveted Lucile Droege Mauntel Conservation Award given each year by the National Council of State Garden Clubs. The Alexandria club competed with 14,377 other clubs representing 387,700 members.

Mrs. M. L. Laird, Jr., 1968–69 club president, tells how the unique multiple-use project got underway. "The whole thing started when members of our club were invited to go to an adjoining parish to see some conservation work being done on part of a city park. The idea was so good, we decided to develop a similar project in our own city park.

"We decided to use about 15 acres for a nature study area that all the schools in the parish could use. We called on the Soil Conservation Service, Louisiana Forestry Commission, Louisiana Wild Life and Fisheries Commission, and representatives from several mineral industries."

The city of Alexandria did most of the work to build structures and signs. The Education Center and the Parish School Board supplied financial help to buy materials. The Forestry commission tagged more than 75 different trees and shrubs for students to identify. The Soil Conservation Service collected 10 monoliths of soils in the parish, prepared a soil map, furnished color pictures of different land uses.

The project was finished in April 1969. A workshop was held for parish teachers to familiarize them with the nature area. More than 100 teachers and school officials turned out.—ALEXANDER KERR, JR., *soil scientist, SCS, Alexandria, La.* ♦

Showcase for country living

A 76-acre Conservation Showcase in northeastern Connecticut is helping to orient former urban residents to country living.

The Windham County Soil and Water Conservation District established the showcase to give newcomers a firsthand view of the alternatives in land uses and conservation practices available to improve their lands. It serves as an outdoor catalog where observers can study the performance of plants before using them on their properties.

The Soil Conservation Service assisted the district in establishing suitable plants for the demonstration area. SCS tests performance of plants at its Big Flats, N.Y., and Cape May Court House, N.J., plant materials centers before they are recommended to the district. The Windham showcase includes nearly 75 introduced species of plant materials being evaluated under a cooperative agreement between SCS and the district. Emphasis is on multipurpose plants that have values for wildlife, erosion control, and beautification, especially those useful in a situation of changing land use.

One of the most versatile plants on the showcase grounds is the perennial flatpea, *Lathyrus sylvestrus*. Its dense mat of leaves and stems produces excellent surface protection against erosion. It is similar in appearance and growth habit to the ornamental sweetpea, although flowers are less numerous and showy. The plants reach a height of 2 to 3 feet during the growing season, then settle to less than a foot during the winter.

At the Windham Showcase, an area cleared for a woods road was seeded in the fall of 1963 to a mixture of perennial flatpea and Kentucky 31 tall fescue. The pea became the dominant species and has successfully competed with quackgrass and woody plants.

Perennial flatpea when used as cover for woods roads, access roads, firebreaks, nature trails, hiking and bridle paths, and powerline rights-of-way, requires little maintenance and provides food and cover for wildlife. Use of this plant for sediment control in urban areas seems feasible.

Showcase visitors also see examples of excellent ground covers of reed canarygrass, smooth brome, birdsfoot trefoil, and crownvetch. They observe wildlife feeding on Cardinal autumn olive, a special strain introduced by the U.S. Department of Agriculture. Amur honeysuckle also provides winter food for pheasants, rabbits, other game, and songbirds.

Through its showcase, the Windham County Soil and Water Conservation District is able to demonstrate many ways to practice conservation on private land.—ALBION L. WEEKS AND ELMER E. OFFERMAN, *district conservationist and resource planning specialist, SCS, Brooklyn and Storrs, Conn.* ♦

Coast farm is haven for birds

"Protect ospreys" is not just a slogan for Mrs. Gilber Fernandez. It is a continuing crusade and typical of her concern for wildlife in the Bristol Conservation District in Massachusetts.

Her zeal in carrying her beliefs to fellow members of bird, garden, and camera clubs, and to business men's groups and conservation organizations has helped to promote interest in wildlife and planting programs.

The 100-acre Stone Barn Farm where Josephine and Gilbert Fernandez live in South Dartmouth, not far from the foaming surf at Horseneck Beach is in itself a demonstration of Mrs. Fernandez' conservation enthusiasm.

On the farm, 2 to 3 acres of food strips consisting of sudax, wheat, corn, and rye attract pheasant, quail, geese, and ducks. Smaller birds enjoy the massive hedgerows of rugosa rose, the quarter-acre cultivated blueberry patch, the acres of juniper, field edges of wild cherry, honeysuckle hiding the stone walls, patches of tatarian honeysuckle and elderberry, the plantings of autumn olive, the cover of bayberry and wild blueberry on the moors, the lines of planted holly, and the sour cherry and black mulberry trees.

Chickadees, cardinals, purple finches, and juncos are among the patronizers of feeding stations about the lawn and flower garden. The farm supports families of great horned owls, raccoons, red foxes, woodchucks, and many cottontails. Other birds are towhees, thrushes, warblers, sparrows, robins, scarlet tanagers, and mockingbirds.

"But the osprey, or fish-hawk, is now one of the world's seriously endangered wildlife species, and we are trying to enlist the support of others to save it," Mrs. Fernandez said.

"These placid birds tend to return year after year to specific locations," continued Mrs. Fernandez. "Our first step was to protect these historic sites and obtain the support of all the landowners concerned and their promise of site preservation."

Seasonal surveys include frequent nest-checks for egg production and losses, chick hatching, and fledging. Broken and unhatched eggs are gathered for analysis.

Ten nests fell down in 1968-69 but the Fernandez' set out nine nest platforms atop sturdy poles of redcedar. These 40 by 40-inch squares, from 12 to 20 feet high, supported manmade nests of materials, interwoven and balanced to a depth of 8 inches.

Visitors to Stone Bar Farm, Mrs. Fernandez believes, are another method of spreading the word that there's a role for everyone in improving the outdoor environment.—AUGUST I. REESE, *district conservationist, SCS, Middleboro, Mass.* ♦

Katy and Bruce Andrews became cooperators with the Oconto County Soil and Water Conservation District in 1960. In 1964, I helped them complete a conservation plan for their 160-acre tree farm surrounded by the Nicolet National Forest in the cutover country of northern Wisconsin.

Their land had once been a small dairy farm, which had proved uneconomic to the previous owner because of the sandy soil, short growing season, and the long haul to markets. The Andrews decided that trees and recreation would be the principal crops in the future.

Katy and Bruce had always been great lovers of the outdoors, and their children had grown up as year-round campers and canoeing enthusiasts. The farm was to be their answer to crowded and littered campgrounds, their escape from the high powered motor boats that endangered their swimming and canoeing.

They built their pond to satisfy their desire for outdoor recreation and to attract wildlife. They also left a 20-acre field open—a planned "island" in the vast forest area. This they seeded to red-clover and planted strips of corn and sunflowers for wildlife food.

A detailed inventory of their forest land was made with a forester from the Wisconsin Department of Natural Resources, and the Andrews joined in the "Trees for Tomorrow" program.

The pond about which Katy Andrews writes is only one of many conservation measures undertaken by an outdoor-minded and talented family.—GLENN GARVEY, *district conservationist, SCS, Oconto, Wis.*

Birth of a pond

By Mrs. Katherine Andrews
A conservation district cooperator, Appleton, Wis.

It is a soft spring evening, and down here by the pond the peepers and bullfrogs are in full chorus.

Later on, in the summer twilight, the hermit thrush will fill the air with his high sweet bugling. The surface of the water is still warm from the afternoon sun, and the bass are leaping for a fresh hatch of insects.

As daylight fades and night descends, the swallows swoop low. The dusky afterglow accents the colors of pails and shovels—red, blue, and yellow—abandoned on a patch of sand at the water's edge. The shouts of the children who played with them seem still to be echoing through the surrounding forest, even though the youngsters themselves have returned to the city, exhausted after a day of splashing in the shallows, catching frogs, and rowing the flat-bottomed boat.

When the moon rises and the starshine is reflected in the water, dark shapes will steal quietly down to drink. There will be deer and raccoon; possibly a she-bear with her cubs; perhaps a swimming muskrat breaking the surface of the pond into silver ripples.

In the winter, when the snow is not too deep and heavy to shovel a path on the pond, there is skating. Tobogganning the slopes is fast and exciting. Adding to the enjoyment is a crackling fire at which to broil wieners, heat chili, toast marshmallows, and warm one's feet and hands.

It's diffcult now to remember that less than 5 years ago the site of our pond was a dry glaciated kettle hole, one of many in the north country.

Originally, there was no sign of water at the bottom of the kettle hole, nor could it even be classified as swampland. But a level area of about three quarters of an acre of mixed brush, marsh-type grass, and wild iris gave us a clue as to what might lie beneath the surface.

If there was water, as we suspected, how far down was it? And was it only runoff from the high tableland adjacent to the kettle hole or were there springs or "slow seeps" that would yield a steady supply to keep a pond filled?

We called in the district conserva-

tionist of the Soil Conservation Service. He told us to make borings from time to time, going down as deep as we could with an auger, to test for water. We were to keep an accurate check of fluctuations in levels—if water were indeed present in any appreciable quantity—and record our findings.

He also explained that this likely would be a water-table pond. Its chief benefit, in this setting, would be to attract wildlife, for deer, raccoon, bear, and other animals—especially deer and bear—come more readily to a water hole in the woods than to the more open spaces around rivers and lakes. Fringe benefits would include picnicking, limited swimming, and, if we "planted" fish, some angling.

It was a suspenseful time as we drilled into the earth at the bottom of the gully. Repeatedly, from the soaking wet weather of early spring through the hot dry spells of late summer and fall, the auger, after going down only a few feet, always came up coated with wet sand and clay. Finally, after 2 years of such testing, we were ready to call in the contractor to begin digging. Plans were drawn up and technical supervision provided by the Soil Conservation Service.

But when our pond project got underway, the suspense of the last 2 years was pale by comparison.

First came the bulldozer, carving a swath 12 feet wide down the hill and through the woods to our pond site. Then, because the ground was soft and spongy, "mats" were hauled in. Made of logs fastened together with cables, they provided a movable platform over which the crane could travel and on which it could rest should the water begin to fill the excavation. A bucket was attached with cables to the boom of the crane. This arrangement is called a "dragline."

After what seemed an interminable round of preparations and postponements, the day of the actual digging arrived. For the contractor and his crew, this was just another pond-building job; for us it was a dramatic hour, and several members of our family were on hand to watch. Since we were out in the middle of the woods, we could not have been likened to "sidewalk superintendents," but rather felt the emotions of a christening party when a ship is launched.

Before the excavating began, it was problematical how far down the dragline would have to dig before water would begin to flow. It was, therefore, cause for elation when water gushed into the hole after the dragline had dug to a depth of less than 4 feet.

In a matter of only a half day's

First the bulldozer, then the dragline, ripped away trees and earth. Then the excavation filled with water; we planted the fish from the game department; and soon peace settled on our pond and a new structure of life came into being. A pond was born. (Photos by the author.)

digging, the water from dozens of small spring pockets was pouring in so fast that a pump had to be put to work to keep the area dry and the dragline—mats and all—from floundering.

Again and again the bucket was dropped into the widening excavation, and a dripping scoopful of wet sand and clay deposited at the edges of the pond site.

Our pond building began in midsummer. Because of work stoppages due to weather and the contractor's schedule, however, it was late September before the excavation had been completed, the excess dirt hauled away, and the mounds of raw earth graded and smoothed, ready for planting ground cover.

We sowed rye and bromegrass, red fescue and clover to minimize erosion. Because the growth was somewhat slow, the spring runoff and heavy rains for several seasons caused washouts. Each time, however, we shoveled the sand and clay back and reseeded. Now we are gradually overcoming this difficulty.

One problem was the cloudiness of the water during most of the first summer. This we corrected by applying alum and lime—a harmless concoction—which acted as a flocculant by drawing the fine particles of clay into masses heavy enough to sink to the bottom.

The vision we had of crocuses, daffodils, and day lilies covering the slopes faded when some of the bulbs we planted failed to weather the first winter or were eaten by deer. Now we are planning to create colonies of wildflowers that are natural to the site. In time, of course, many of these will spread from the nearby ridges, but we hope by cultivation to speed the process.

One of the fascinating aspects of our pond venture was the rapidity with which wildlife moved in to use this manmade habitat. Deer didn't wait until the noise and turbulence of working machinery had stopped, but found the place to their liking as soon as the bulldozer opened up a trail. And the pond area was scarcely finished and filled with water when a sandpiper skittered along the newly formed beach. Soon after that came bear, raccoon, and muskrat. Their tracks could be seen, along with those of the deer, leading to the pond and around the water's edge.

It was too late in the season for other forms of pond life, but by the next spring we had small salamanders, frogs, and, finally, the aquatic and semiaquatic plants and animals that nature has equipped especially for pond dwelling. Among the latter are the whirligig beetle, which grabs a bubble of air and darts beneath the water at your approach; the water-boatman; the backswimmer; the water strider; and more than a score of others.

Developing along with the larger, more visible species of pond life, are the countless microorganisms, each depending in some way on the other and together forming a complete community—a world within a world, or, as the scientists say, "an ecological structure" or an "ecosystem."

It is always heartening to watch this system come back to life in the spring, after collapsing in the cold death of winter. With the return of songbirds, leaves, and wildflowers, it proclaims renewal and gives those who make the venture of faith another of Nature's assurances of resurrection. ♦

Town solves water shortage

By Henry J. Thiel
SCS district conservationist, Graham, N.C.

Lake Burlington, at Burlington, N. C., is a combination of private, municipal, state, and federal cooperation. All were needed to construct the lake, and all are vital to keeping it.

The city council built Lake Burlington in the late 1950's after a serious drought taught them a bitter lesson on sediment control. Burlington formerly depended on a 137-acre reservoir built in 1927. At the old lake site, the city council owned no land above the waterline, possessed no access to the land adjoining the lake, and employed no conservation measures to control sediment.

SCS personnel made a sediment survey of the old reservoir in 1953 to determine the storage loss due to silt. They reported the silting rate to be 13.5 acre-feet annually, or 0.9 percent of capacity—an annual loss of about $7,776 of the original investment. When the drought hit in 1953, the water level dropped 16 feet. Too late, the city was helpless to save the reservoir. As an emergency measure, pumps at Haw River diverted water 3 miles overland into Buttermilk Creek, where it flowed into the old city lake, thereby saving Burlington.

In 1955, the city council set out to build a new reservoir on Stony Creek. Land was purchased, construction contracts were let, and work got underway on the $1.4 million Lake Burlington—designed to be seven times larger than the old lake. Besides the lake site, the city council also purchased 1,300 adjoining acres and took steps to make Lake Burlington a model of land management and sediment control.

The critical area adjoining the lake was protected by clearing and seeding the shoreline, planting trees, maintaining good ground cover, and resloping eroded areas. The State Highway Department built 3 miles of paved road to Lake Burlington, adding proper ditches, culverts, and roadside stabilization measures to carry runoff and insure that the lake will remain as silt-free as possible.

Private landowners within the watershed—mostly cooperators with the Alamance Soil and Water Conservation District—and the city signed a 20-year agreement for the construction and maintenance of 20 small siltation ponds to keep sediment out of the lake, provide stock and irrigation water, furnish fishing and recreation, assist in flood control, serve as water reserves, and enhance the area's beauty.

Lake Burlington was completed in July 1960 and filled the following January, while the watershed commission encouraged local participation in erosion control and conservation practices. Commission members believe that conservation on Lake Burlington has paid off in at least four ways:

(1) Improved cooperation with adjoining landowners.

(2) Excellent cooperation among the landowners, highway department, SCS, the conservation district, and the city council.

(3) Reduced sediment in the reservoir.

(4) An emergency water reserve of 75 million gallons. ♦

Burlington, N. C., found municipal water depends on cooperation.

12 new RC&D projects approved for planning help

Twelve new Resource Conservation and Development projects, covering more than 50 million acres or parts of 55 counties in the United States, are now eligible for planning assistance from the Department of Agriculture.

Addition of the 12 projects will make a total of 68 RC&D projects now underway across the Nation.

The projects include: Little Colorado River Plateau Area, Arizona; Chestatee-Chattahoochee Area, Georgia; Tri-Isle, Hawaii; Southern Iowa; Twin Valley Area, Louisiana; Threshold to Maine Area, Maine; Beartooth Area, Montana; Nebraska Panhandle; Lewis & Clark 1805, North Dakota; Ouachita Mountain Area, Oklahoma; Columbia-Blue Mountain, Oregon and Leon-Bosque Area, Texas. ♦

Residents of Glenwood Park Methodist Home for the aged share this view of Brush Creek.

Brush Creek recreation exceeds 5-year projection

William J. Melven and Robert A. Speich
Field biologist and RC&D project coordinator, SCS, Morgantown and Princeton, W. Va.

Central Appalachia's Brush Creek watershed—chosen as 1969 Watershed of the Year by the National Watershed Congress—brings flood protection, water supply, health facilities, new industry, and recreation to the Princeton, W. Va., area.

In recreation alone, Brush Creek is 5 years ahead of the planners' expectations. Enthusiastic mountain residents in 1969 filled the newly opened Glenwood Park at site 14, and made full use of public facilities and activities including family picnic tables and grills, group picnic shelters, fishing, nature trails, open play areas and equipment, and paddle boating.

Glenwood Park was developed through the cooperation of SCS and the Mercer County Court. Site 14 plays a role in a system of structures that provides drinking water for more than 40,000 people and makes sewage lagoons practical for some 6,200 people. In addition, it provides flood protection for industrial development in the flood plain.

Attendance at Glenwood Park totaled more than 31,000 during the 1969 recreation season. A 50-cent entrance fee (or 25 cents per individual) is charged each family at the gate. Additional revenue comes from the $10-a-day reservation fee for using the group picnic shelters. Bo Bowman, Glenwood Park director and Mercer County school teacher, says that the shelters were booked up for every Saturday and Sunday all season.

Boats were available for rent by the hour. A sporting goods store in Princeton operates as a concessionaire to provide row boats, canoes, and paddle boats. The concessionaire and the county court share equally in the income and the expense of the boats. About 16 percent of the park visitors rented a boat during 1969.

Since SCS cost-sharing was not available for playground equipment when this project was planned, income from the park fees is returned to Glenwood Park to buy necessary equipment and to pay salaries of four Neighborhood Youth Corps employees.

Site 14's Glenwood Park does not end recreation plans for Mercer County citizens. A recreation plan already is prepared for site 15. Experience from Glenwood Park provides the new recreation plan with more public services. ♦

Neighborhood Youth Corps boys clean up the picnic area.

Mulch tillage in Missouri

By H. Allen Nottorf
Conservation agronomist, SCS, Columbia, Mo.

Farmers in the "Show Me State" are showing interest in reduced tillage systems.

Lower operating costs, conservation potential, and equivalent yields appeal to those who now use "no-till" planters.

A combination of properly spaced terraces and tillage methods which leave large amounts of shredded plant material throughout the year offers a tremendous opportunity for effective erosion control on sloping land. But of the half dozen no-till planters sold in the state during the spring of 1968, most were purchased to reduce crop production costs. They were used on flatland where erosion was not a primary consideration.

Several farmers planted soybeans in standing wheat stubble immediately after harvest to take advantage of firm, moist soil that would have been degraded by further tillage. As

This corn, slot-planted in tall fescue sod, yielded 155 bushels per acre.

Soybeans in these plots on Bradford Farm at the University of Missouri were no-till planted in a new seeding of timothy. Wheat was previously green chopped and timothy broadcast in the wheat during early spring.

a result one eastern Misscuri operator brought in 46 bushels of soybeans per acre.

The "no-till" planter has also been used to plant in grass sod, alfalfa, redclover, and cover crops. It is usually essential to use a quick-killing herbicide because a vigorous cover crop competes with corn seedlings for moisture. Such competition either prevents a stand or retards corn growth in the western Corn Belt.

For most of the Missouri innovators, timely planting and adequate herbicide produced yields comparable to those by traditional methods. However, plots planted late in heavy sod without enough chemical weedkiller failed completely.

Corn that was "no-till" planted in old fescue sod on the Bradford Farm at the University of Missouri in 1968 made 155 bushels per acre and matched yields of other planting methods. It took 2 pounds of atrazine and one-half pound of paraquat applied at planting time to kill the sod.

With this method complete control of weeds by herbicide is essential. Residues in and between rows make conventional cultivation for weed control difficult. But, it is worth the saving in time, effort, and soil to leave surface debris in place.

The USDA Agricultural Research Service reports that varying tonnages of crop residues reduce erosion to about one-half to one-tenth of that expected in fields where plows bury natural mulch.

However, conservationists do not believe that reduced tillage is the sole solution to the problem of soil loss from cropland. Reduced tillage is not a substitute for terraces, but it allows them to be set further apart. Operators may then use modern implements that span more rows and spare them time and money. ♦

SCS District Conservationist Rex Johnson examines heavy corn stalk residue in 20-inch rows.

Conservation in action...

Nursery furnishes windbreak plants

California

Windbreak, wildlife, and erosion-control plants adapted to the high desert are important products of a nursery operated by the Antelope Valley Soil Conservation District.

Hot summer winds off the Mojave Desert, wintry blasts, and strong westerlies in the spring make windbreaks almost a necessity for rural homeowners. Many have found that such an investment increases property values and makes their homes more salable.

The sight of attractive, hardy trees beside some homes has encouraged other owners to plant, too. More than 1,400 acres of farmstead windbreaks and 150 miles of field windbreaks have been established in Antelope Valley.

Each year, the nursery produces as many as 150,000 plants for local cooperators and other districts throughout the state. Among the many varieties it offers are:

Incense cedar; Aleppo pine; Arizona cypress—a rapid-growing conical tree; and Evergreen tamarisk—a salt-tolerant tree commonly used in saline-alkaline areas.

5-year-old Arizona cypress windbreak on the Taggart farm.

Tour of townspeople and ranchers on Woodruff ranch.

The nursery sells deciduous trees bare-root, but because of climatic limitations, evergreens are sold in plant bands and cans.—ERNST PASCHKE, *soil conservationist, SCS, Lancaster, Calif.*

Texas

Grass ignores precedent and thrives on "wasteland"

To their astonishment, a Texas couple converted 200 acres of land covered with brush and silt to some of the best grassland in the county in less than a year.

With the help of a Great Plains Conservation Program contract signed in November 1965, Mr. and Mrs. George Woodruff of the Lower Clear Fork Soil and Water Conservation District replaced tangled mesquite, catclaw, blue brush, and cactus with lush forage.

In February 1966, the area was rootplowed and seeded to a mixture of King Ranch bluestem, sideoats grama, and blue panicgrass. A GPCP cost-shared fence that protected the young stand was later used to distribute grazing evenly.

During the next 2 years, another 240 acres of pasture was treated with equal success. Woodruff also grubbed and seeded an additional 120 acres.

All pastures are rested from April 1 until the first fall frost after brush control and seeding. Proper grazing management has meant doubled livestock population and more forage each year.

Brush on hillsides and other areas left as wildlife habitat now support more deer, quail, turkeys, and other species. Four livestock ponds stocked with fish provide many hours of fishing for the Woodruffs and their friends.—JOHN S. WILLIAMS, *district conservationist, SCS, Breckenridge, Tex.*

New Mexico

Camp attracts youth, teaches conservation

Conservation education in southern New Mexico's Sacramento mountains found an eager audience of at least 15,000 youngsters during the summer of 1969.

The estimate covers recreation camp attendance only and does not include the hundreds of visiting family groups whose numbers are growing every year.

Cloudcroft alone claims a half dozen major camps operated by the Boy Scouts, YMCA, and church groups. All have heavy summer schedules, crowded with youngsters from throughout the Nation—many who have never seen mountain scenery.

Most, if not all, counselors and camp directors teach nature studies and conservation, while the youngsters are also enjoying the outdoors. Conservation is a practical matter at the Southern Baptist Convention's

Dam in the main channel of Little Hoosic River.

Royal Ambassador Camp, where youth-built rock dams in the Cox Canyon Arroyo already show effective erosion control.

Gene Whitlow, a Las Cruces, N. Mex., school teacher and part-time SCS employee, assisted several camps' staff in teaching conservation practices. Whitlow also taught Girl Scouts at the Tall Pine Camp how to identify plants and wildlife along the camp's nature trails.

While commercial and residential development continues in southern New Mexico, conservationists are looking to outdoor recreation areas where youth can be taught the importance of keeping the environment clean and enjoyable.

New York

Pilot project still stimulating growth

Business in Berlin, N.Y., has been better in the very areas where the Little Hoosic River was once most damaging.

A 2-story commercial bank is going up on a site where at least one shopkeeper once closed early rather than stay around to get wet another time. An auto body shop, town garage, school garage, telephone substation, and expanded lumber yards have been built on river banks made safer by flood-retarding structures and land treatment upstream.

The community in eastern Rensselaer County has not been flooded since the completion of a watershed project during the 1950's, although it is not protected from the larger and more infrequent storms.

Gravel trapped by five debris dams built with the help of the Soil Conservation Service is used on town roads. One of the dams is a place for supervised swimming. The Agricultural Research Service uses another as a site for waterflow measurement.—JOHN F. NIGRO, *district conservationist, SCS, Wynantskill, N.Y.*

Colorado

Commercial bird ranch finds pheasant market

After 3 years of study and experimentation, Jim and Bette McCullough of Montrose, Colo., felt ready to establish a commercial game bird farm. Unlike others in Colorado, they intended to sell dressed birds to restaurants and hotels.

In late 1967, SCS helped them develop a conservation plan to provide swimming areas for waterfowl and good ground cover for pheasants. Wide, flat-bottomed ditches—less expensive than ponds—provided adequate water by means of simple gated structures for filling and draining. Trees, shrubs, and an alfalfa-brome grass mixture provided shade, wind protection, and pheasant cover.

More than 3,700 of the first pheasants were marketed at 12 weeks of age—4 weeks earlier than anticipated. He kept a small breeding flock, reported death and culling losses to be 8 percent, and declared a profit in his year-end records.

More development—pens, ditches, plantings, incubator—is planned shortly for McCullough's Thunderhead Bird Ranch. Eventually, McCullough plans to keep 500 brood pheasants and to market several thousand young birds annually. He maintains an outside income until his game bird operation can become sufficiently developed.—DONALD A. TETSELL, *district conservationist, SCS, Montrose, Colo.*

North Dakota

Dakota fishermen catch an 'impossible dream'

A trout pond on the North Dakota prairie? Velva, a small community on the Souris River, prides itself on accomplishing the impossible.

In early 1967, the Velva Sportsman's Club proposed the construction of a dam for fishing and other outdoor recreation. SCS found the proposed site well suited for a trout pond. Federal and state agencies, as well as local business firms and individuals were asked to share construction costs. Landowners Glenn Miller and Lynn Rogers donated the property for the dam and lake site.

SCS technicians, working through the district, designed the dam and provided technical assistance for construction. The Agricultural Stabilization and Conservation Service furnished 80 percent—or $7,200—of the construction cost, while the North Dakota Game and Fish Department supplied the trout and $1,200 more. Total cost of the 6.6-acre Velva Dam and lake was approximately $10,200.

Since its dedication in late 1967, Velva's Future Farmers of America have built picnic tables. Grass seed, fencing materials, and labor have been donated by club members and local businesses. More than 2,500

rainbow trout were released in 1968 and ever since the Velva community has invited visitors to see their impossible dream.—DANIEL J. KELNER, *technician, SCS, Velva, N. Dak.*

Wisconsin

Highway commissioner wants conservation help

Conservation cut maintenance costs for the Jefferson County, Wis., Highway Commission last summer in spite of near-record rainfall.

"In many places we had to clean several inches of dirt and stones off roads at considerable expense to the county," Commissioner William F. Scherwitz said in a letter to Keith Kreger, SCS conservationist assisting the Jefferson County Soil and Water Conservation District.

"But where your organization has helped farmers develop complete soil conservation programs, the water is clear, roadside ditches are intact, and there is practically no silting."

Commissioner Scherwitz mentioned gullying and topsoil loss that occurred after heavy rains hit cornfields planted up and down hill and places where sod waterways had been sacrificed for a few more ears of corn.

"It causes us to wonder what these lands will produce for future generations," the commissioner said.

In concluding his letter, Scherwitz added that he wished more people would "avail themselves of the opportunity for assistance. We could all be better off. ♦

Timber sold in 1969

The Forest Service reports 18.9 billion board feet of timber was sold in 23,418 sales during fiscal year 1969. More than 20,000 of these sales were designed for the small timber operator. Timber receipts in 1969 were at a record level of $306.8 million—an increase of $101.2 million over the previous year.♦

Meetings . . .

Wildlife Conference on man's environment

"Man's Stake in a Good Environment" is the theme of the 35th North American Wildlife and Natural Resources Conference on March 22–25, in Chicago, Ill.

The principal subject of the two general sessions will focus on the conservation and natural resource problems arising from the steady expansion of population and development. The principal topics are "Population and the Environment;" "Filth in Lake and Sea;" "Agricultural Pollution;" "Outlook for Maintaining and Improving the Environment;" "Responsibility of Industry in the Environment;" "Cities are Part of the Environment, Too;" "Reaching the People;" and "The Fight Must Go On."

The conference's six technical sessions will feature nearly 50 speakers on many phases of wildlife research and management.

Contractors to view latest equipment

The 51st Annual Convention of the Associated General Contractors of America will take place March 6–12 in New Orleans, La. The exhibit will be the biggest equipment showing ever held at an AGC convention. Some 63 exhibitors will show their newest construction equipment.

Speakers are to present the latest information on legislation, economics, and industry conditions.

Association features man in tomorrow's world

The 25th annual conference of the Association for Supervision and Curriculum Development March 14-18 in San Francisco, Calif., will offer members new ideas and opportunities for "positive and constructive curricular changes, school programs, education arrangements, and procedures in direct response to the needs of all learners and the improvement of our social order."

Three general sessions will explore the conference theme, "A Man for Tomorrow's World."

The Curriculum Materials Exhibit includes the most recent instructional materials, curriculum bulletins, and courses of study from school systems, state departments of education, and colleges and universities throughout the country.

"Change" challenges the American Roadbuilders

American Roadbuilder's Association gives the green light for a hard-hitting program built on the theme, "The Challenge of Change," for its annual convention March 1–5, New York.

The broad dimensions of the Nation's transportation problems will be outlined at three general sessions. Two specific problems, identified as critical, will be given a searching analysis in workshop sessions. The first problem is that of manpower, including engineers, engineering technicians, and construction labor; the second is construction safety.

Dates and places

March 1-5, American Road Builders' Association, New York, N.Y.
2-6, American Society of Photogrammetry, Washington, D.C.
6-12, Associated General Contractors of America, New Orleans, La.
11-14, National Farmers Union, Denver, Colo.
13-17, National Science Teachers Association, Cincinnati, Ohio.
14-18, Association for Supervision and Curriculum Development, San Francisco, Calif.
15-19, American Concrete Pipe Assoc. Technical Conference, New Orleans, La.
16-18, American Pulpwood Association, New York, N.Y.
20-22, National Wildlife Federation, Chicago, Ill.
20-26, Lawn and Garden Week
21-23, The Wildlife Society, Chicago, Ill.
22-25, North American Wildlife and Natural Resources Conference, Chicago, Ill.
April 1-3, Engineering Geology and Soil Engineering annual symposium, Pocatello, Idaho.
4-9, American Society of Planning Officials, New York, N.Y.
19-23, Urban Land Institute, Honolulu, Hawaii.
28-29, Weeping Lovegrass Symposium, Ardmore, Okla. ♦

Review

Garbage as You Like It. By Jerome Goldstein. *1969. Rodale Books, Inc. Emmaus, Pa. 243 pp., illus. $4.95.*

New thinking and daring experimentation are needed in these United States in dealing with the waste-disposal problem. This is author Goldstein's proposition.

He tells of a housewife—a rather indolent sort—who when asked how she disposed of her garbage replied she just kicked it around until it got lost. And that, according to the author, is what we in this country have been doing all this time.

Our garbage, at the rate of a ton a year per person, comes back to haunt us in the water we drink, the air we breathe, and in the ugliness we live with.

Really, it isn't at all necessary, Goldstein points out. It is proved to be economically profitable for communities to dispose of waste in a way that will present no problems to anyone.

Composting, not especially a new idea, is the sorting out of elements that can be reused—used in many ways. Some cities have broken the barrier already, or a part of it. Houston gets $11 a ton for its tin cans. Houston and Chicago sell processed fertilizer. For almost everything there is a market.

What's needed, the author points out, are laws and a willingness for officials to seek the techniques needed to solve the problem and answer New York Mayor John Lindsay's question: "What are we going to do about all that garbage?"
—Tarleton A. Jenkins, *Information Division, SCS, Washington,* D.C.

New publications

The Story of U. S. Agricultural Estimates. By U. S. Statistical Reporting Service. *1969. USDA Misc. Publ. 1088. 137 pp., illus. $1.75.* A concise history of the Statistical Reporting Service, Economic Research Service, and their predecessors. Traces the development of data-gathering and reporting from animal inventories on colonial New England tax lists to current electronic data processing methods. Studies by agricultural societies, agricultural surveys, censuses, and annual state crop production estimates were recorded even before the USDA was established in 1862.

In addition to facts and philosophy behind the figures, SRS provides a clear picture of the legislation and reorganizations that led to its creation in 1961. In each of three major time segments (1862-1905, 1905-30, 1930-66), the authors weave the story of agricultural statistics into a chronological overview of American agriculture and related businesses and how they grew into the Nation's largest industry.

Windbreaks for Conservation. By Arthur E. Ferber. *1969. USDA Agr. Inf. Bull. 339. 30 pp., illus.* Windbreaks in fields are most needed where wind erosion is a problem in parts of the vast Great Plains; on the sandy and muck soils in the Great Lakes region; on sandy soils along the Atlantic and Gulf seaboards; and in the irrigated valleys of the Pacific southwest and the Rio Grande, Colorado, and Columbia River basins. They are not only being used in the North and West but are useful in almost every state—even in the Deep South. And they are just as valuable to the country homeowner as to the farmer.

This bulletin, superseding Miscellaneous Publication 759, *Windbreaks in Conservation Farming,* gives the latest information on windbreaks. It also presents a "wind-chill index" table based on a study by U. S. Army research teams of the chilling effect of wind on the human skin.

Soils as an Engineering Material. By Wesley G. Holtz. *1969. U.S. Department of Interior, Bureau of Reclamation Water Res. Tech. Pub. Rpt. 17. 45 pp., illus. $0.55.* Presents the history and the continuing need of soils engineering research; the many and varied forming processes of soils that call for an investigative job of the soils engineer; and the need to consider geological history, present conditions, construction sequences, and anticipated operating conditions to obtain meaningful data for the design of earth structures and foundations. Illustrated by several photographs showing construction failures because of the soils.

Catfish Farming, A New Farm Crop. By Roy A. Grizzell, Jr., Olan W. Dillon, Jr., and Edward G. Sullivan. *1969. USDA Farmers' Bull. 2244. 22 pp., illus. $0.15.* A catfish farm needs a water-distribution system, convenient drainage facilities, and complete protection against floodwater. This bulletin discusses the production of channel catfish, blue catfish, and white catfish and goes into detail about the number and size of ponds, water supply, selection of species, stocking, feeding, and harvesting. Several tables are presented on different stocking rates, number of fish per pond, and monthly feeding schedule.

Answers to Your Questions About American Indians. *1968. U.S. Dept. of Int., Bureau of Indian Affairs. 42 pp., illus.* General information on Indian lands and people, legal and economic status, education, health, enforcement on reservations, and the Bureau of Indian Affairs. Suggests other sources for further study of culture, history, crafts, and Indian lore, including selected ding lists for adults and younger students. Indian publications and a list of addresses of better-known museums with Indian collections complete this concise, packaged overview of the subject.

Water Use: Principles and Guidelines for Planning and Management in Wisconsin. Edited by Ruth L. Hine. The demand has been so great for this booklet, announced in *Soil Conservation* for December 1969 as being free on request, that a charge of $1.00 a copy has been placed on it. It can be ordered from Wisconsin Chapter, Soil Conservation Society of America, P. O. Box 511, Madison, Wis. 53705.

America's Department of Natural Resources . . . the U.S. Department of Interior. *(1969) U.S. Dept. Int. 47 pp., illus. $0.40.* A description of the Department of the Interior, its organization and activities, with emphasis on the conservation function.

Developing Campgrounds for Recreational Vehicles. *1969. Wisconsin Bureau of Commercial Recreation, (Madison). Recreational Development Series 2. 23 pp., illus.* Presents statistics on the numbers and types of recreational vehicles; camp design and layout; rates and expenses, and costs per campsite.

The Right to Exist. *No date. U.S. Dept. Int. Bureau of Sport Fisheries and Wildlife. 12 pp., illus.* A beautifully illustrated report on endangered wildlife.

Soil surveys

Carroll County, Maryland. By Earle D. Matthews. *1969. 92 pp., illus.; with maps 4 inches to the mile (1:15,840).* Surveyed by Merl F. Hershberger, Richard H. Anderson, R. A. Foster, L. W. Ilgen, R. S. Long, F. G. Loughry, J. E. McDonald, J. B. Rayburn, Elmer F. Sauer, J. D. Sheetz, W. G. Souder, David C. Taylor and Philip J. Walter.

Recon . . .

A quick overview of the conservation scene

The first reasonable estimate of streambank erosion for the Nation" went on the books this fall after the Corps of Engineers completed a study authorized by the River and Harbor Act of 1968 (Public Law 90–483). Results show that out of 7 million bank-miles of streams in the United States, some 549,000 bank-miles are currently showing some degree of erosion. Of these, nearly 148,000 are experiencing serious erosion resulting in $90 million in damages annually.

Some scientists have estimated that multiple reuse of water will be necessary by 1980 when water consumption for all uses will equal or exceed recoverable streamflow and ground-water supply. To date, plant-soil filters are the cheapest ground-water recharge method produced in response to that dire prediction. Cost of treatment: $5 per acre-foot compared to $50 per acre-foot for chemical methods.

Comment on nitrates

Commercial fertilizer poses no additional threat to our environment unless it is applied in excess or at the wrong time of the year. Such management failures that result in nitrate losses can be avoided if agronomists and fertilizer dealers take water quality into account when making recommendations. Many fertilized fields contribute less nitrate to streams and underground water supplies than they did several years ago.—B. A. STEWART, *USDA Agricultural Research Service, Bushland, Tex.*

Thanks to their farsighted landlord, some New York City apartment dwellers may someday have access to second homes in Massachusetts. The owner plans to construct one cottage for each 10 acres on a 160-acre tract for clients who occupy his NYC apartments. Wildlife areas, trails, and nature study sites are to be included, according to the Berkshire, Mass., DC. State Conservationist Benjamin Isgur says it "looks like a captive market—could be profitable!"

Conservation—jobs

Except for the Civilian Conservation Corps program of the 1930's, conservation needs have not been widely hailed as an economic opportunity. The millions of man-days of labor necessary to accomplish conservation objectives has at times seemed an insurmountable hurdle. In our present dilemma of growing technological unemployment, conservation needs are an asset also because they provide the worthwhile employment necessary for equitably distributing a high standard of living.—S. BLAIR HUTCHISON, *assistant director, Intermountain Forest and Range Experiment Station, U.S. Forest Service, Ogden, Utah.*

Two brand new district newsletters captured both first and second prizes nationally in the annual NACD-FIEI contest this year. Naturally, they also won first and second place in the "new newsletter" category. National winners were: Allegheny County, Pa., SWCD, first; Teton County, Wyo., SWCD, second; and Anderson County, S.C., SWCD, third. The district in Morrison County, Minn., won third place among new newsletters. Awards were presented in San Francisco last month by the Farm and Industrial Equipment Institute during the NACD meetings.

Urbanization heats up the environment, says a University of Maryland scientist. In Columbia, Md., surface temperatures in the middle of the much publicized new town are 10 degrees higher than in surrounding woods and fields. Also, the population of a few thousand has boosted the amount of air pollutants in the 2-year-old town by more than 10 percent.

The hour is upon us

We are the "next generation" that conservationists talked about 30 years ago. Suddenly, good resource use is not only something vital to our grandchildren, but vital to us. Suddenly, that vague tomorrow is today. And the real tomorrow—that we had better start planning for right now—is only the rest of this century.—NORMAN A. BERG, *associate administrator, SCS, to the Arkansas Association of Conservation Districts.*

Response to the proposed national Environmental Teach-in (April 22) confirms public interest in conservation revealed by a recent Gallup poll on environment. Coordinators in Washington, D.C., have heard from every state, including at least 300 campuses. Local organizers are encouraged to involve communities as well as colleges. Those who want to find out what's going on in their area can do so by contacting Environmental Teach-In, Inc., Room 200, 2000 P St., N.W., Washington, D.C. 20036 (202-293-6960).

Utilize youth, women

Urban People—especially young people and women of all ages—are interested in conservation. I think many of them are motivated enough to act if they are given a meaningful job to do. District leaders can make sure that newcomers to conservation are informed and given a piece of the action.—KENNETH E. GRANT, *administrator, SCS, in talk to Oklahoma district supervisors' association.*

From the Administrator:

Decade for people and wildlife

Clocks, calendars, and history books are artificial things. Man has designed them in an attempt to organize his thoughts and actions and perhaps delude himself into thinking that he has some measure of control over the passage of time.

Creatures who live close to nature, of course, know better. They do not waste time in philosophizing on milestones of history, but concern themselves with adapting their actions to make the best use of what they find in their environment. The primary concerns of deer are how to find the food and shelter needed to survive, grow, and reproduce. This is true in spite of our occasional inclination to believe that they keep track of the opening and closing dates of the hunting season.

So, in many ways, the change from 1969 to 1970 is an imaginary thing. We chuckle at the lady who sighed on New Year's Eve, "I'm sure glad the sixties are over with; I don't think I could stand them much longer!" We do, however, face many new problems and opportunities in the seventies that we hardly dreamed of 10 years ago.

For one thing, we have developed deep national concerns over the pollution of our water, air, soil—yes, even our plants and animals—with the waste products of our own "civilization." One of the most hopeful signs of the times, as an aid to solving these problems, is the growing realization that human beings, like wildlife, are subject to the laws of nature.

This is why I believe we may be entering on a new decade for wildlife as we strive to meet people's needs and desires more adequately. Our efforts to maintain a clean, healthy, and beautiful environment for ourselves are bound to produce an improved environment for wildlife. And we are beginning to realize that just as wildlife needs our help, we, in turn, need the benefits that come from healthy, plentiful populations of wildlife.

We have always treasured the tradition of a Nation of outdoorsmen—hunters, trappers, and fishermen. But we also know that wildlife is important to many other segments of our population. For example, I know of a campground operator who counts wildlife as one of the prime attractions for her campground. She tells of one family who will never forget the morning when a family of baby wood ducks fluttered down from their tree nest onto the picnic tables at breakfast time.

This realization that all of our resources, including wildlife, are part of a vast complex ecological pattern is reflected in the increased emphasis being placed on comprehensive planning at all levels of government. The Soil Conservation Service, along with other agencies concerned with natural resource conservation, can help insure that wildlife and its environment receive adequate consideration in the formation of these comprehensive plans. I have instructed our biologists and related resource specialists to assign a major part of their time to assisting with this type of long-range planning.

We realize, of course, that the success of such planning depends on the wholehearted cooperation of all individuals, agencies, and organizations concerned with conservation of natural resources. We pledge to join with other interests in constructive efforts in the seventies to make sure that fish and wildlife will be given major attention in planning our future environment.

Kenneth E. Grant

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Plants for city dwellers and birds

People who live in the city can have songbirds in their own yards if they plant such shrubs as Cardinal autumn olive, Amur honeysuckle, or Washington hawthorne.

These three excellent ornamental plants, among many others, were evaluated and made available to state and commercial nurseries by the Soil Conservation Service plant materials centers. The plants were developed specifically for erosion control but were found to be also useful as wildlife food and cover or game management areas and on farms planning wildlife areas.

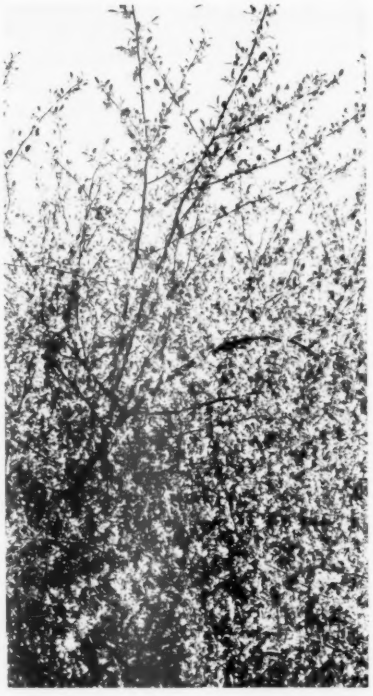
Demands for screening materials and the need for small shrubs for other urban uses stimulated the evaluation of these plants for the "block dweller." They have interesting leaves and brightly colored fruits and flowers.

People found that the plants worked out very well, but the exciting part is that where these plants were established, robins, cardinals, cedar waxwings, bluebirds, and many others moved in and made their homes.

Autumn olive and Amur honeysuckle have been used as screens and hedges between residential yards and roads, to screen off commercial developments, and to provide more individual privacy to homeowners in towns and suburbs.

By including these plants in a landscaping plan, a city dweller who has a lot 60 x 80 feet can bring a bit of natural woody loveliness and birdlife to his own backyard.

Some people even like the taste of Autumn olive, and people themselves may end up being the chief competitors of the birds for the sweet, crisp, tart red fruits. The berries make an excellent jelly, and individual plants have yielded as high as 150 pounds of fresh fruits when picked in the fall.—SYLVAN T. RUNKEL, AND B. H. ROUNDTREE, *conservation biologist, Des Moines, Iowa, and plant materials specialist, SCS, Elsberry,* Mo.♦



Flowering Elsberry autumn olive (top) and Mich-77 autumn olive shown with weeping willow, walnut, and poplars make good wildlife cover and attractive screening shrubs.

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